EA-1203; Trench 33 Widening in 218-W-5 Low-Level Burial Ground, Hanford Site, Richland, Washington

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PREFACE

This environmental assessment (EA) has been prepared to assess potential environmental impacts associated with the U.S. Department of Energy's proposed action: to widen and operate the unused Trench 33 in the 218-W-5 Low-Level Burial Ground. Information contained herein will be used by the U.S. Department of Energy, Richland Operations Office Manager, to determine if the Proposed Action is a major federal action significantly affecting the quality of the human environment. If the Proposed Action is determined to be major and significant, an environmental impact statement will be prepared. If the Proposed Action is determined not to be major and significant, a Finding of No Significant Impact will be issued and the action may proceed. Criteria used to evaluate significance can be found in Title 40, Code of Federal Regulations (CFR) 1508.27.

This environmental assessment was prepared in compliance with the *National Environmental Policy Act* (NEPA) *of 1969*, as amended, the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508), and the U.S. Department of Energy Implementing Procedures for NEPA (10 CFR 1021). The following is a description of each section of the EA.

1.0 Purpose and Need for Action. This section provides a brief statement concerning the problem or opportunity the U.S. Department of Energy is addressing with the Proposed Action. Background information is provided.

2.0 Description of the Proposed Action. A description of the Proposed Action with sufficient detail to identify potential environmental impacts is provided.

3.0 Alternatives to the Proposed Action. This section describes reasonable alternative actions to the Proposed Action, which would address the Purpose and Need. A no action alternative, as required by 10 CFR 1021, also is described.

4.0 Affected Environment. This section provides a brief description of the locale in which the Proposed Action would take place.

5.0 Environmental Impacts. The range of environmental impacts, beneficial and adverse, of the Proposed Action are described in this section. Impacts of alternatives are briefly discussed.

6.0 Permits and Regulatory Requirements. This section provides a brief description of permits and regulatory requirements for the Proposed Action.

7.0 Organizations Consulted. Any outside groups, agencies, or individuals contacted as part of the environmental assessment preparation and/or review are listed in this section.

8.0 References. This section provides a list of documents used to contribute information or data in preparation of this environmental assessment.

Appendices. Additional information necessary to support an understanding of the Proposed Action, alternatives, and potential impacts is provided here. Comments resulting from review of the environmental assessment by states and tribes or other stakeholders and the response to those comments will be included in the appendices.

GLOSSARY

Acronyms

ALARA	as low as reasonably achievable
CFR	Code of Federal Regulations
CWC	Central Waste Complex
DOE	U.S. Department of Energy
EA	environmental assessment
EDE	effective dose equivalent
EIS	environmental impact statement
ESA	*Endangered Species Act of 1973*
HCRC	Hanford Cultural Resources Review
HCRL	Hanford Cultural Resources Laboratory
HSRCM	Hanford Site Radiological Control Manual
LLBG	low-level burial grounds
LLMW	low-level mixed waste
LLW	low-level waste
NEPA	*National Environmental Policy Act of 1969*

PA	performance assessment
RCRA	*Resource Conservation and Recovery Act of 1976*
rem	roentgen equivalent man
TRU	transuranic
WAC	*Washington Administrative Code*
WMO	Waste Management Operations
WRAP 1	Waste Receiving and Processing 1

DEFINITION OF TERMS

Low-level waste (LLW), is waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent nuclear fuel or byproduct material as defined in DOE Order 5820.2A, "Radioactive Waste Management" (DOE 1988). Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level waste, provided the concentration of transuranic is less than 100 nanocuries per gram (nCi/g).

LLW is further classified according to radionuclide concentration into Category 1, Category 3, and Greater Than Category 3. This classification system is similar to the U.S. Nuclear Regulatory Commission waste classification system found in 10 *Code of Federal Regulations* (CFR) 61, "Licensing Requirements for Land Disposal of Radioactive Waste." This categorization is adapted to fit isotopic and volume characteristics of Hanford Site waste. The higher the category number, the greater the activity and long-lived radionuclide concentration. This results in stricter requirements for stabilization and disposal.

Low-Level Mixed waste (LLMW), is waste containing both radioactive components and dangerous waste as defined in *Washington Administrative Code* (WAC) 173-303, "Dangerous Waste Regulations," requiring treatment, storage, and/or disposal in accordance with the *Resource Conservation and Recovery Act of 1976* (RCRA) regulations.

Transuranic (TRU), without regard to source or form, is waste that is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years and concentrations greater than 100 nCi/g at the time of assay.

METRIC CONVERSION CHART

Into metric units			Out of metric units		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length			Length		
inches	2.54	centimeters	centimeters	0.393	inches
feet	0.305	meters	meters	3.28	feet
yards	0.914	meters	meters	1.09	yards
miles	1.61	kilometers	kilometers	0.62	miles
Area			Area		
square feet	0.092	square meters	square meters	10.76	square feet
square yards	0.836	square meters	square meters	1.20	square yards
square miles	2.59	square kilometers	square kilometers	0.39	square miles

square feet	2.296×10^{-5}	acres	acres	4.36×10^{4}	square feet
acres	0.404	hectares	hectares	2.47	acres
Volume			Volume		
cubic feet	0.028	cubic meters	cubic meters	35.31	cubic feet
cubic yards	0.76	cubic meters	cubic meters	1.31	cubic yards
gallons	3.79	liters	liters	0.26	gallons
Temperature			Temperature		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit

After: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Second Ed., 1990, Professional Publications, Inc., Belmont, California.

1.0 PURPOSE AND NEED FOR ACTION

The following sections describe the purpose and need, and provide background information concerning this environmental assessment (EA).

1.1 PURPOSE AND NEED

The underlying purpose and need for the agency to take the proposed action.

The U.S. Department of Energy (DOE), Richland Operations Office (RL) needs cost-effective waste disposal capacity to accommodate large-package Category 1 Low-Level Waste (LLW), and to facilitate segregation of LLW.

1.2 BACKGROUND

BACKGROUND information on the purpose and need, that led to the need for action.

Since the start of the defense materials production mission in 1943, the Hanford Site has disposed of or stored more than 600,000 cubic meters (21.2 million cubic feet) of solid radioactive waste (WHC 1996a). Disposal of radioactive waste in burial grounds started in 1944. Before 1970, all solid waste on the Hanford Site, regardless of radionuclide content or hazardous constituents, was placed in trenches and covered with soil.

Beginning in 1970, transuranic (TRU) waste was segregated from LLW and retrievably stored in the Low-Level Burial Grounds (LLBG) until 1987. In August 1987, the dangerous components of radioactive waste began to be regulated under WAC 173-303, "Dangerous Waste Regulations," and the hazardous components of radioactive waste regulated under the RCRA. Since this date, Low-Level Mixed Waste (LLMW) is now stored in aboveground storage at the Central Waste Complex (CWC) in the 200 West Area. LLMW is not considered in this Environmental Assessment.

LLW is disposed in the active LLBG, which are located in the 200 West and 200 East Areas. Examples of waste disposed in the LLBG are process waste, laboratory waste, and construction debris. Current waste forms typically consist of paper, plastic, rubber, wood, glass, dirt, metal, and other types of approved waste. The typical containers used for disposal of LLW are metal drums from 3.8 liters (1 gallon) to 416.4 liters (108 gallons) in size, and wood, concrete, metal, fiber-reinforced plastic boxes and other approved containers. Boxes are made in various sizes to accommodate the waste items, with some waste wrapped in plastic. Large-package LLW shipments are received periodically at the LLBG. These packages include items such as intact rail cars, tanker trucks, cover blocks, cranes,

and failed equipment.

Typical operations in the LLBG include receipt of LLW from certified generators. The vehicle carrying the LLW, such as a standard semi-truck trailer or flatbed truck, is positioned within or beside the receiving trench and unloaded using forklifts, a crane, and/or an alternate approved method. Disposal documentation is completed, and the trench is backfilled to cover the LLW. Trench stabilization occurs before final closure. Operating burial grounds that comprise the LLBG are as follows:

200 West Area:

- 218-W-3A
- 218-W-3AE
- 218-W-4B
- 218-W-4C
- 218-W-5
- 218-W-6

200 East Area:

- 218-E-10
- 218-E-12B

The existing trench designated to receive Category 1 LLW only trench is being rapidly filled. Low to medium activity LLW is considered Category 1 LLW, while Category 3 LLW has higher radioactive concentrations. When Category 1 LLW is commingled with Category 3 waste, interim waste form stabilization to support the soil cover overburden would be in accordance with Category 3 conditions. Current waste form stabilization costs for Category 3 LLW in compliance with the *Performance Assessment for the Disposal of Low-Level Waste in the 200 West Area Burial Grounds* (WHC 1995a) is estimated to be approximately $33.57 per cubic meter ($0.93 per cubic foot) more than for Category 1 LLW stabilization. Full stabilization and final cover design are expected to be substantially less expensive for Category 1 waste.

Current waste projections in the *Low-Level Burial Ground Disposal Plan* (WHC 1995b) identify a need for burial ground space to cost-effectively dispose of LLW. The last trench used for disposal of large-package LLW is full. Existing narrow Category 1 trenches are not suitable for receipt and disposal of large-package LLW. The current disposal practice of large packages is to dispose of them in a current Category 3 trench, which is the only remaining wide bottom trench in the LLBG. LLW could be disposed in presently configured trenches; however, this would result in both higher short-term (stabilization) and long-term (final closure cover) expense.

In 1975, Hanford Site burial ground activities were evaluated in the *Final Environmental Impact Statement on Waste Management Operations, Hanford Reservation* (ERDA 1975). In 1995, DOE issued the *Draft Waste Management Programmatic Environmental Impact Statement* (WMEIS)(DOE 1995) examining the DOE complex-wide management of current and anticipated volumes of various waste, including LLW. DOE is considering preparation of a "Hanford Solid Waste Management Environmental Impact Statement" (HSW-EIS) that would examine the Hanford Site management of various waste volumes subject to the alternatives evaluated in the programmatic EIS, including, but not limited to the disposal of LLW and closure of LLBG. Final closure of trenches in the LLBG would be addressed in the planned HSW-EIS.

2.0 DESCRIPTION OF THE PROPOSED ACTION

The following sections describe the proposed action, and provide additional environmental information concerning the proposed action.

2.1 DESCRIPTION OF THE PROPOSED ACTION

Proposed Action description in detail sufficient to identify potential environmental impacts.

The proposed action would widen and operate the existing and unused disposal Trench 33 within the 218-W-5 Burial

Ground (Figure 2) in the 200 West Area (Figure 3) for disposal of LLW. The base of this trench (Figure 4) would be widened on the south side from approximately 12.2 meters (40 feet) to 20.4 meters (67 feet) with the same slope (1.5:1) along the entire 354 meter (1160 foot) length of the trench. Existing capacity would be expanded from approximately 12,000 cubic meters (428,000 cubic feet) to 20,300 cubic meters (717,000 cubic feet). Bulldozers using standard construction practices would move soil to the south side of the length of the current trench configuration and used as backfill during operations. Backfilling operations would cover the appropriately packaged LLW with a minimum of 2.4 meters (8 feet) of soil. The proposed action would begin during the summer of 1997.

Figure 1. Proposed Trench 33 Widening.

Widening Trench 33 would allow for disposal of both boxed and large-packaged Category 1 LLW. The waste packages would be unloaded into the disposal trench by forklift, crane, or other approved method. Typical LLW operations on the Hanford Site would not change as a result of the proposed action. Cost of widening Trench 33 would be approximately $50,000. This would provide for more cost-effective land use and would increase the capacity of the LLBG, without an increase to the footprint of the LLBG. Specific closure issues for Trench 33 would be evaluated in the planned HSW-EIS.

2.2 ENVIRONMENTAL INFORMATION

Other environmental information that has been prepared, or will be prepared, directly related to the proposed action.

A Biological Resources Review (Appendix A) and a Cultural Resources Review (Appendix B) have been prepared for the proposed action.

Figure 2. Hanford Site.
Figure 3. 200 West Area Low-Level Burial Grounds.
Figure 4. 200 East Area Low-Level Burial Grounds.
Figure 5. Location of Designated Trenches in 218-W-5 Low-Level Burial Ground.

3.0 ALTERNATIVES TO THE PROPOSED ACTION

Alternatives to the proposed action are discussed in the following sections.

3.1 NO ACTION ALTERNATIVE

CEQ and DOE NEPA regulations require DOE to analyze the "No Action alternative," i.e., to examine what would happen if nothing were done. Note that generally this is a continuation of the status quo.

The No Action alternative would involve continuing operations of the LLBG and handling the disposal of LLW in existing trench space. However, use of trenches as these become available likely would not provide the capability to prevent or minimize future commingling of Category 1 with Category 3 LLW. This would result in less efficient use of trench space at a higher cost for eventual disposal of Category 1 LLW.

3.2 OTHER ALTERNATIVES

Other alternatives considered. CEQ regulations direct all agencies to identify reasonable alternatives that would achieve the purpose and need.

Other Alternatives to the proposed action are described in the following sections.

3.2.1 Alternative to Widen Trench 36 in the 218-E-12B Burial Ground

This alternative would widen existing, unused trench 36 in the 218-E-12B Burial Ground in the 200 East Area for disposal of LLW. However, Waste Management Operations (WMO) has only surveillance activities in the 200 East Area LLBG. Operational costs would be higher for disposal of LLW in the 200 East Area because equipment would have to be procured, or diverted from use in the 200 West Area.

3.2.2 Alternative to Widen Trench 37 in the 218-W-4C Burial Ground

This alternative would widen and deepen the existing and unused Trench 37 in the 218-W-4C Burial Ground. However, since Trench 37 is not as long and is more shallow than Trench 33, this alternative would not provide equivalent capacity for LLW disposal. If Trench 37 was to be deepened and widened to provide equivalent capacity, costs would be greater than to merely widen Trench 33.

3.2.3 Alternative to Dig New Trench

An alternative to dig a new trench to the size of the proposed action was considered. However, at a cost of about $2.62 per cubic meter ($2.00 per cubic yard) to excavate soil and dig a trench of similar size to the proposed action, the new trench would cost approximately $127,000, $77,000 more than the proposed action.

3.2.4 Alternative for OffSite Disposal

The alternative of offsite disposal was considered. If this alternative was taken, the excavation may be similar to the proposed action. However, additional transportation would be required, which would increase safety hazards and the cost for disposal of LLW.

4.0 AFFECTED ENVIRONMENT

Existing environment to be affected by the proposed action and alternatives. Summary information only should be provided, with more detailed information referenced.

The following sections provide a discussion of the existing environment to be affected by the proposed action and alternatives.

4.1 GENERAL HANFORD SITE ENVIRONMENT

The Hanford Site is 1,450 square kilometers (560 square miles) located in southeastern Washington State, in a semiarid region with rolling topography. Two topographical features dominate the landscape: Rattlesnake Mountain located on the southwest boundary, and Gable Mountain located on the northern portion. The Columbia River flows through the northern part and forms part of the eastern boundary of the Hanford Site. Areas adjacent to the Hanford Site primarily are agricultural lands. The 200 West Area and 200 East Area have been heavily used as waste processing and waste management areas.

The Hanford Site has a mild climate with 15 to 18 centimeters (6 to 7 inches) of annual precipitation, with most of the precipitation taking place during the winter months. Temperature ranges of daily maximum temperatures vary from normal maxima of 2C (36F) in early January to 35C (95F) in late July. Monthly average wind speeds are lowest during the winter months, averaging 10 to 11 kilometers per hour (6 to 7 miles per hour), and highest during the summer, averaging 14 to 16 kilometers per hour (8 to 10 miles per hour) (PNNL 1996a). Tornadoes are extremely rare; no destructive tornadoes have occurred in the region surrounding the Hanford Site.

During 1994, the Hanford Site air emissions remained below all established limits set for regulated air pollutants (PNNL 1996b). Atmospheric dispersion conditions of the area vary between summer and winter months. The summer months generally have good air mixing characteristics. If the prevailing winds from the northwest are light, less favorable dispersion conditions might occur. Occasional periods of poor dispersion conditions occur during the winter

months.

The vegetation on the Hanford Site is a shrub-steppe community of sagebrush and rabbitbrush with an understory consisting primarily of cheatgrass and Sandberg's bluegrass. The typical insects, small birds, mammals, and reptiles common to the Hanford Site can be found in the 200 Area plateau (PNNL 1996a). Relatively undisturbed areas of the mature shrub-steppe vegetation are high-quality habitat for many plants and animals and have been designated as "priority habitat" by Washington State.

Most mammal species known to inhabit the Hanford Site are small, nocturnal creatures, primarily pocket mice and jackrabbits. Large mammals found on the Hanford Site are deer and elk, although the elk exist almost entirely on the Fitzner Eberhardt Arid Lands Ecology Reserve. Coyotes and raptors are the primary predators. Several species of small birds nest in the steppe vegetation. Semiannual peaks in avian variety and abundance occur during migration seasons. Additional information concerning the Hanford Site can be found in the *Hanford Site National Environmental Policy Act (NEPA) Characterization* report (PNNL 1996a).

DOE and its contractors dominate the local employment picture with almost one-quarter of the total nonagricultural jobs in Benton and Franklin counties. Ninety-three percent of Hanford Site personnel reside in the Benton and Franklin county areas. Therefore, work activities on the Hanford Site play an important role in the socioeconomics of the Tri-Cities (Richland, Pasco, and Kennewick) and other parts of Benton and Franklin counties (PNNL 1996a). Other counties are less affected by changes in Hanford Site employment.

4.2 SPECIFIC SITE ENVIRONMENT

The proposed widening of Trench 33 would occur in a previously disturbed area within the 200 West Area 218-W-5 Burial Ground (Figure 4). This trench is approximately 6.4 kilometers (4 miles) southwest from the Columbia River. The 200 West Area is not located in a 100-year or 500-year floodplain, nor is it located within a wetlands area (PNNL 1996a). The elevations for the 200 Areas average about 218 meters (715 feet) above mean sea level. The 200 West Area does not contain any prime farmland, state or national parks, forests, conservation areas, or other areas of recreational, scenic, or aesthetic concern. The city of Richland (population approximately 32,000), located about 40 kilometers (25 miles) away in Benton County, adjoins the southernmost portion of the Hanford Site boundary and is the nearest population center.

4.2.1 Soils and Subsurface

The soil in the 200 Areas is predominately a sand and gravel mixture. All areas within the proposed action have been disturbed previously and scraped clean of any vegetation. The geologic strata under the surface layer, in descending order, are Holocene eolian deposits, Hanford formation, Ringold Formation, and the Columbia River Basalt Group. The eolian sands are fine- to coarse-grained, and relatively quartz- and feldspar-rich. Deposits of the Hanford formation underlie the eolian deposits. Hanford formation strata generally are dominated by deposits typical of the gravel-dominated facies consisting of uncemented granule to cobble gravels and minor coarse-grained sand. This is underlain by the top of the Ringold Formation. Basalt flows of the Columbia River Basalt Group and intercalated sediments of the Ellensburg Formation underlie the Ringold Formation. The region is categorized as one of low to moderate seismicity (PNNL 1996a).

4.2.2 Hydrology

The water table in the 200 Areas is approximately 73 meters (240 feet) to 88 meters (290 feet) below the surface, and is unaffected by contamination plumes from the LLBG in 200 West and 200 East Areas (PNNL 1996b). No groundwater contamination plumes have been detected originating from the LLBG.

4.2.3 Air Resources

The Hanford Site operates under a Prevention of Significant Deterioration (PSD) permit established by the U.S.

Environmental Protection Agency which is designed to protect existing ambient air quality. In addition to the temporary fugitive dust discharged to the air during expansion of Trench 33, there would be occasional air pollutants at the site from tractors excavating dirt and fork lifts moving waste within the burial grounds. No substantial increases in overall emissions are envisioned from the proposed action and no changes to the PSD permit would be required.

4.2.4 Plants and Animals

All vegetation has been previously removed from Trench 33, no flora were observed, and no migratory bird species were observed in the immediate vicinity of the proposed project, as related in Biological Review #97-200-023 (Appendix A). No plant or animal species protected under the *Endangered Species Act of 1973* (ESA), on the federal list of "Endangered and Threatened Wildlife and Plants" (50 CFR 17), or on Washington State list of threatened or endangered species were found in the area of the proposed action.

4.2.5 Cultural Resources

A Hanford Cultural Resources Review #97-200-023 (Appendix B) was conducted for the proposed action. The review concluded that, "It is the finding of the Hanford Cultural Resources Laboratory (HCRL) staff that there are no known cultural resources or historic properties within the proposed project area."

5.0 ENVIRONMENTAL IMPACTS

Potential environmental impacts from the proposed action and alternatives are discussed in the following sections. Impacts are addressed in proportion to their potential significance.

The following sections describe impacts from the proposed action.

5.1 CONSTRUCTION PHASE IMPACTS

Description of impacts from the construction phase activities of the proposed action.

Impacts from the construction phase activities are described in the following sections.

5.1.1 Soil or Subsurface Disturbance and the Consequences

All soil disturbances would occur on previously disturbed soil within the 218-W-5 Burial Ground. All soil and subsurface activities would be temporary. Therefore, the anticipated impacts to the environment are not expected to be consequential.

5.1.2 Liquid Discharges to the Groundwater or Surface Waters and the Consequences

Trench widening activities would include sprinkling clean water for dust control. However, because the water table is more than 73 meters (240 feet) below the surface, these activities would have little affect on groundwater or surface waters.

5.1.3 Gaseous, Particulate, or Thermal Discharges to the Air and the Consequences

Small quantities of gaseous, particulate, or thermal discharges would occur from typical construction activities. Sources would include trucks, tractors, and construction equipment. Dust would be controlled by watering down, or other dust suppression methods. No substantial increases in overall emissions are envisioned from the proposed action and no changes to the PSD permit would be required.

5.1.4 Radionuclide Releases or Direct Radiation Exposure and the Consequences

Because the proposed action would take place in a clean area, no contamination is expected. Therefore, no radionuclide releases or direct radiation exposure during trench widening activities would occur.

5.1.5 Nonhazardous Solid Waste Generated and the Consequences

It is not expected that any nonhazardous solid waste would be generated.

5.1.6 Hazardous or Dangerous Waste Generated and the Consequences

It is not expected that any hazardous solid waste would be generated.

5.1.7 Hazardous Substances Present and the Consequences

No hazardous substances would be present or expected to be present.

5.1.8 Disturbance to Previously Undeveloped Areas and the Consequences

All areas within the proposed action are on previously disturbed areas.

5.1.9 Consumption or Commitment of Nonrenewable Resources

Consumption of nonrenewable resources (e.g., petroleum products, diesel fuel, etc.) would occur. The amount of consumption would be minimal.

5.1.10 Effects on Cultural Resources

A Hanford Cultural Resources Review, HCRC #97-200-023 (Appendix B) was conducted for the preferred alternative. The review concluded: "It is the finding of the HCRL staff that there are no known cultural resources or historic properties within the proposed project area." Therefore, no adverse impacts under the *National Historic Preservation Act* are expected.

5.1.11 Effects on Federal or State Listed, Proposed or Candidate, Threatened or Endangered Species

The Biological Review (#97-200-023) (Appendix A) concludes "...no plant and animal species protected under the ESA, candidates for such protection, or species listed by the Washington State government were observed in the vicinity of the proposed site. No adverse impacts to species or habitats of concern are expected to occur from the proposed action."

5.1.12 Effects on any Floodplain or Wetland

The construction would not occur in a 100- or 500-year floodplain, nor within any area designated as a wetland.

5.1.13 Effects on any Wild and Scenic River, State or Federal Wildlife Refuge, or Specially Designated Area

The proposed action is outside any Wild and Scenic River corridor, state or federal wildlife refuge, or specially-designated area.

5.1.14 Reasonably Foreseeable Accidents Considered and the Effects

The reasonably-foreseeable accidents under the construction phase of the proposed action for widening Trench 33 would be typical construction accidents. All construction personnel would follow approved safety procedures for the trench-widening activities. Public health and safety would not be affected because the area is closed to the general public. Typical construction hazards would exist, however the risk of severe accidents would be small.

5.2 OPERATION PHASE IMPACTS

Description of impacts from the operation phase activities of the proposed action.

Impacts from the operation phase activities are described in the following sections. No change in typical LLBG operations is expected from the proposed action.

5.2.1 Soil or Subsurface Disturbance and the Consequences

Because Trench 33 is an unused trench, the associated soils are free of pre-existing radioactive material. Any work in Trench 33 would be performed with administrative controls in place. Soil movement activities during backfilling would be temporary, and the likelihood of contamination small. Therefore, it is anticipated that impacts to the environment would not be consequential.

5.2.2 Liquid Discharges to the Groundwater or Surface Waters and the Consequences

Soil moving during backfilling operations would be accompanied by water sprinkling for dust control. Since only 15 to 18 centimeters (6 to 7 inches) of precipitation occurs annually on the Hanford Site, no runoff is expected because approximately 96 percent of the water is lost through evapotranspiration (PNNL 1996a). Moreover, the water table is more than 73 meters (240 feet) below the surface, so liquid discharges are expected to be small and have little effect on groundwater or surface waters.

5.2.3 Gaseous, Particulate, or Thermal Discharges to the Air and the Consequences

Small gaseous, particulate, or thermal discharges from trucks, fork lifts, and other equipment would be generated during routine operations. No substantial increases in overall emissions are envisioned from the proposed action and no changes to the PSD permit would be required.

5.2.4 Radionuclide Releases or Direct Radiation Exposure and the Consequences

Any work in the LLBG would be performed in compliance with As Low As Reasonably Achievable (ALARA) principles; applicable federal and state regulations; and DOE Orders and guidelines. The LLBG are monitored routinely for radiation levels; and Radiation Work Permits would specify the radiological condition and any LLBG entry requirements. Workers would be required to have appropriate training, wear appropriate personal protective equipment, adhere to ALARA principles, and follow established administrative controls.

Only minor radionuclide contamination releases, if any, are expected. The potential radiation received by workers during the proposed action would be typical of exposure in other LLBG, and be administratively controlled below DOE limits established in 10 CFR 835, *Occupational Radiation Protection* and the Hanford Site Radiological Control Manual (HSRCM 1994). Those limits require that individual radiation exposure be controlled below an annual effective dose equivalent (EDE) of 5 rem per year.

5.2.5 Nonhazardous Solid Waste Generated and the Consequences

It is not expected that any nonhazardous solid waste would be generated.

5.2.6 Hazardous or Dangerous Waste Generated and the Consequences

No hazardous or dangerous waste is expected to be generated.

5.2.7 Hazardous Substances Present and the Consequences

No hazardous substances are expected to be present.

5.2.8 Any Disturbance to Previously Undeveloped Areas and the Consequences

All operations would occur within previously disturbed areas.

5.2.9 Consumption or Commitment of Nonrenewable Resources

Consumption of nonrenewable resources (e.g., petroleum products, diesel fuel, etc.) would occur for short periods. The amount of consumption would be minimal.

5.2.10 Effects on Cultural Resources

There would be no effects on cultural resources.

5.2.11 Effects on Federal or State Listed, Proposed or Candidate, Threatened or Endangered Species

No Federal or State-listed, proposed, candidate, threatened, or endangered species are expected to be affected.

5.2.12 Effects on any Floodplain or Wetland

The proposed action is outside any floodplains or wetlands.

5.2.13 Effects on any Wild and Scenic River, State or Federal Wildlife

Refuge, or Specially Designated Area

The proposed action is outside any Wild and Scenic River corridor, state or federal wildlife refuge, or specially-designated area.

5.2.14 Reasonably Foreseeable Accidents Considered and the Effects

A reasonably foreseeable accident considered during operation would be a vehicle accident with fire involving 66 drums as analyzed in the *Solid Waste Burial Grounds Interim Safety Analysis* (WHC 1996b) Section 6.2.2.2.1. It is postulated that a bulldozer catches on fire while covering the drums with soil and rolls onto uncovered waste containers. The potential for such a rollover is very low as a result of the bulldozer's low center of gravity. As many as 66 drums could be breached by the rolling bulldozer, based on the cross-sectional area of the bulldozer. Assuming that all of the contents of the breached drums are consumed by fire and that the drums contained the highest allowable quantities of radionuclides, the consequences of this accident would still be well below radiological risk comparison guidelines (WHC 1996b).

The respective maximum onsite and offsite dose consequences for this accident scenario are 0.94 rem EDE and 5.96×10^{-4} rem EDE. At an annual frequency of 5.3×10^{-4}, the onsite risk acceptance is not exceeded.

Hazards common to earth-moving and crane-operating projects would exist. Operations in Trench 33 would be typical

of waste handling in the LLBG and would be conducted in conformance with recognized safety codes, regulations, and approved procedures. Controls would reduce the chance of accidents to an acceptable level.

5.3 SOCIOECONOMIC IMPACTS

Description of socioeconomic impacts that would result from the proposed action.

Operations during the proposed action would use existing operating and construction personnel at Hanford. In a community of over 165,000 persons with a workforce in excess of 10,000 persons on the Hanford Site, the socioeconomic impacts of this proposed action would be expected to be small. There would be no discernible impact to employment levels within Benton and Franklin counties.

5.4 ENVIRONMENTAL JUSTICE IMPACTS

Description of environmental justice impacts that would result from the proposed action.

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or socioeconomic effects of their programs and activities on minority and low-income populations. Minority populations and low income populations are present near the Hanford Site (PNNL 1996b). DOE is in the process of developing official guidance on the implementation of the Executive Order. The analysis of the impacts in this EA indicates that there would be minimal impacts to both the offsite population and potential workforce by implementing the proposed action, because the entire proposed action would occur on the Hanford Site using existing operations and construction craft personnel. The offsite health impacts from the proposed action analyzed in this EA are expected to be minimal. Therefore, it is not expected that there would be any disproportionate impacts to any minority or low-income portion of the community.

5.5 CUMULATIVE IMPACTS

Description of the cumulative impacts that would result from the proposed action.

In analyzing the cumulative impacts of the proposed action, increased dust particulate releases to the atmosphere and watering down of soil would occur temporarily during the widening of Trench 33. Waste generation resulting from the proposed action is expected to be minimal. Any materials would be managed and recycled or disposed of in accordance with applicable federal and state regulations. The proposed action is sited within areas designated for waste management.

Because the proposed action would involve only existing operations and construction craft personnel, no change is expected in the overall workforce on the Hanford Site or within Benton and Franklin counties. There would be no adverse socioeconomic impacts or any disproportionate impacts to any minority or low-income portion of the community would occur. Potential impacts from the proposed action are not expected to contribute to cumulative impacts on the Hanford Site.

5.6 IMPACTS FROM ALTERNATIVES

Alternatives and the No Action Alternative are discussed in the following sections.

5.6.1 Implementation of the No Action Alternative

Qualitative discussion on impacts that would result from implementation of the no action alternative.

The No Action Alternative would involve continuing operations of the existing LLBG and handling the disposal of LLW as trench space is available. The increased cost for soil covers consequent to the commingling of Category 1 and

Category 3 waste would occur.

5.6.2 Implementation of Alternatives

Qualitative discussion on impacts that would result from implementation of alternatives.

The impacts of the alternative to widen trench 36 in the 218-E-12B Burial Ground would be similar to those from widening Trench 33. However, there would be increased safety hazards, operational costs, and particulate releases to the atmosphere. These would be due to the need to transport equipment (such as forklifts and cranes), and personnel from WMO in the 200 West Area to the 200 East Area.

The impacts of the alternative to widen and deepen trench 37 in the 218-W-4C Burial Ground would be similar to those for widening Trench 33. However, Trench 37 would not provide equivalent capacity.

The alternative to dig a new LLW trench would cost approximately $77,000 more than the proposed action, however the environmental impacts would be similar.

The alternative of offsite disposal may also involve temporary dust particulate releases during soil moving activities, depending on the specific location. However, this alternative would require greater costs for packaging, transportation and disposal, as well as greater transportation hazards and vehicle exhaust releases.

6.0 PERMITS AND REGULATORY REQUIREMENTS

Regulatory requirements affecting the proposed action and necessary permits.

It is the policy of DOE to carry out its operations in compliance with all federal, state, and local laws and regulations; Presidential Executive Orders; DOE Orders; and RL Directives. The proposed action would follow pollution prevention requirements under *Executive Order 12856: Federal Compliance with Right-To-Know Laws and Pollution Prevention Requirements*. Environmental regulatory authority over the Hanford Site is vested in federal and Washington State agencies.

7.0 ORGANIZATIONS CONSULTED

Tribes, government agencies, and other interested parties consulted during the preparation of this document.

Before approval of this EA, a draft version would be sent to the Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation, the Wanapum, the Yakama Indian Nation, U.S. Fish and Wildlife Service, Washington State, Benton County, and other interested parties for a 20-day review. It will be placed on the Internet and in the local DOE public reading room. All comments received will be considered in preparation of the final EA.

8.0 REFERENCES

10 CFR 835, DOE "Occupational Radiation Protection".

10 CFR 1021, DOE "National Environmental Policy Act Implementing Procedures".

40 CFR 1500-1508, Council on Environmental Quality "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act".

50 CFR 17, "Endangered and Threatened Wildlife and Plants".

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National Historic Preservation Act of 1966, 16 U.S.C. 470 et seq.

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APPENDIX A

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APPENDIX B

CULTURAL RESOURCES REVIEW